Substitute Specification and Abstract (Clean Version)

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DEEP-ROLLING APPARATUS OF A DEEP ROLLING MACHINE FOR CRANKSHAFTS

BACKGROUND OF THE INVENTION

The present invention relates to a deep rolling apparatus of a deep rolling machine for crankshafts where two arms across from each other support a deep rolling head or a support roller head, whereby the support roller head is provided with two support rollers with parallel axes and the deep rolling head with at least one work roller whose axis of rotation is in the same plane as the axis of rotation of the crankshaft and forms an angle with it, with a driving device that produces the closing and opening motion of the deep rolling apparatus well as the deep rolling force.

A deep rolling apparatus of this type is known e.g. from DE 299 10 214.9 and DE 202 00 926.2. In either case the patents deal with deep rolling apparatuses provided with devices to avoid a collision of the tools with the oil collars of the pin journals of the crankshaft. Normally, two work rollers are installed in pairs and at a distance from each other in a deep rolling head and enter the radii or annular fillets between the pin journals and the webs of the crankshaft under the action of the deep rolling force while the crankshaft rotates around its axis of rotation. The axes of rotation of the two work rollers lay in the same plane as the axis of rotation of the crankshaft or are slightly offset relative to the axis of rotation of the crankshaft. The work rollers are inclined outward in relation to the deep rolling head and form a sharp angle with the axis of rotation of the crankshaft.

Inside the deep rolling head the two work rollers bear on a back up roller that is mounted in the deep rolling head in such manner that it cannot take over any forces in the longitudinal direction of the crankshaft.

Support roller heads may develop forces in axial direction, e.g. when the axis of one of the two support rollers of a support roller head is not exactly parallel with the axis of rotation of the crankshaft. In addition alignment errors in the alignment of the deep